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steeper. A student reporter thought it to be his duty to announce to the newspaper world that a new law of physics had been discovered, and the importance of the discovery seems to have increased with each successive announcement.

This experience reminds me of a similar one which happened to me years ago. At the time when reporters everywhere were rushing to physics laboratories in order to learn something of X-rays, a reporter came to me. He found me experimenting with Hertz waves. By means of a large double-convex lens of wax, the waves were being brought to a focus upon a photographic plate enclosed in a wrapping of black paper. For several weeks I had been trying to produce a shadow picture upon the plate. The reporter seemed interested, and he seemed to have some intelligence. He could appreciate the evidence that the lens caused a refraction of the rays. Although he was informed in the most emphatic manner that this was not a refraction of X-rays, the public announcement was made that I had succeeded where others had failed, in the refraction of X-rays.

It seems to be impossible to quench a disturbance of this kind when it has once been emitted from a news-agency. Scientific readers have probably had enough of such experience to see the importance of keeping, in an accessible place, a few grains of salt.

FRANCIS E. NIPHER

THE INDUSTRIAL FELLOWSHIPS AT PITTSBURGH

TO THE EDITOR OF SCIENCE: The industrial fellowship project, originated in the University of Kansas by Professor Robert K. Duncan and now in flourishing operation under his direction in the University of Pittsburgh under the name of the "Mellon Institute of Industrial Research and School of Specific Industries," has been more than once subjected to the criticism which found a place in an otherwise favorable reference in the presidential address of Mr. Arthur D. Little to the American Chemical Society at its recent meeting at Rochester.¹

¹ SCIENCE, November 7, 1913, p. 652.

While some doubt may reasonably be expressed as to the possibility of close individual supervision of so many widely varying projects, the results obtained thus far seem entirely satisfactory to those behind the movement.

When first made this criticism had, I think, some validity. But to any one who has come into touch with the Mellon Institute, even as a visitor, it must be evident that the difficulty has been squarely met by "those behind the movement." The endowment of the fellowships is now so liberal as to permit of the employment of investigators of experience, who do not require "close individual supervision." In consequence, the relations of the Director and the Fellows are rather comparable to those of a university president and his corps of professors and instructors than to those of a university professor and his class of graduate students. Furthermore, the director is now assisted in the work of supervision by an associate director and an assistant director. Thus the services of three advisers are at the command of each Fellow, who may, moreover, obtain help from his colleagues without divulging the secrets of his own research.

If one acquainted with the project merely as an onlooker might venture an opinion upon the qualifications most essential to the success of the director of such an institute, it would be that a wide and sound general knowledge of scientific principles, a broad sympathy enabling one to appreciate the widely differing viewpoints of business men and of investigators and inventors, an active but disciplined scientific imagination and a strong, firm will are of more importance than an encyclopedic acquaintance with details.

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QUEBEC, CANADA,

November 18, 1913

SCIENTIFIC BOOKS

Untersuchungen ueber Chlorophyll. Methoden und Ergebnisse von RICHARD WILLSTAETTER und ARTHUR STOLL. Ein Bd., pp. 424, mit 16 Text-figuren und 11 Tafeln. Verlag von Julius Springer, Berlin. 1913. M. 18.00, geb M. 20.50.

If the well-known saying of Goethe "Denn eben wo es an Begriffen fehlt, da stellt ein Wort zur rechten Zeit sich ein" applied in the past to any group of phytochemical substances, its application to plant pigments was certainly justifiable. Such designations as "the green coloring matter of leaves," or "the blue coloring matter of flowers" are not as euphonious as chlorophyll and anthocyanin, but it is doubtful if they would have done as much harm. These words of Greek origin certainly enjoyed the advantage of brevity as well as of euphony, but they also carried with them something of a notion that they stood for more or less definite chemical compounds about which we flattered ourselves that we knew something, although this knowledge had not crystallized into structural formulas, the chemical shorthand expression of their properties. Plant physiologists were not the only sinners in this direction, but chemical literature is almost equally replete with illustrations of such misleading use.

To any one who is at all acquainted with the chemical literature on plant pigments, the researches of Willstaetter and his collaborators, as they have made their appearance in the *Annalen* since 1906, have come as a great relief. It is equally a relief, though of a different kind, to have the results, as laid down in these twenty-two Abhandlungen, together with more recent ones, coordinated to a "gemeinsames Ganzes." If we have admired Willstaetter's experimental researches, we are more grateful for his literary labors that have made available to us the results of his labors in the laboratory.

Even a partial review of the contents of this monograph would lead too far for a non-technical journal like SCIENCE. Suffice it to point out that all aspects of the subject, it would seem, are treated in such a manner that the person who desires to inform himself in a general way can use the book to advantage as well as the investigator who is particularly interested in this special field. Plant physiologists as well as chemists will find the volume

replete with useful information as well as interest.

We have here another illustration of German "Gruendlichkeit" that is not impaired by specialization and detail, but that has accomplished the best because of special effort on the one hand and because of the application of a wide general knowledge to a restricted problem on the other hand. It reminds one of Berzelius's letter to Woehler in which the older Swedish chemist pats his young German friend on the back, as it were, when, in words that one would scarcely look for to a chemist, he makes light of the more or less accidental discovery of a new element by Sefstroem—a discovery that had just escaped Woehler—as compared with the brilliant and far-reaching researches of the man to whom is commonly attributed the first organic "synthesis."

If the Germans have felt the necessity of supplementing the research activities, that have so long been characteristic of the scientific institutes of their universities, by the Kaiser Wilhelm Foundation, this contribution from the "Kaiser Wilhelm-Institut fuer Chemie" may well serve as a good omen of the excellent results that may be expected in the future from this new institution devoted to scientific research.

If the knowledge that we now have to deal with definite chemical substances when we speak of the "Abbau" products of chlorophyll and its partial synthesis, affords a feeling of satisfaction, the excellent microphotographic views of the crystals of these substances assist in strengthening the feeling that our present knowledge, as elucidated by Willstaetter, rests on a good foundation.

E. K.

The Principles of Stock-breeding. By JAMES WILSON, M.A., B.Sc., Professor of Agriculture in the Royal College of Science for Ireland, Dublin, author of "The Evolution of British Cattle and the Fashioning of Breeds." Published in 1912 by Vinton and Company, Ltd., 8 Bream's Buildings, Chancery Lane, E. C., London. 8vo. Pp. vi + 146.

This book is an exposition of the recently